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# The Navy SEAL Physical Fitness Guide



Edited by Patricia A. Deuster, Ph.D., M.P.H.

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# The Navy SEAL Physical Fitness Guide

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Department of Military and Emergency Medicine  
Uniformed Services University of the Health Sciences  
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# Acknowledgments

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The authors would like to recognize the invaluable contributions to the development of this guide by the following individuals. CAPT Kenneth Long participated in both panel reviews and provided useful suggestions and comments. His meticulous work was greatly appreciated by all. CAPT Peter Toennies reviewed and provided substantive comments about the chapter “Swimming for Fitness”. Mr. Jeremy Levine and Ms. Brandi Schoeber provided information about strength training.

Importantly, we were extremely fortunate to receive valuable input from several SEALs throughout the development of this guide. ENS Frances Franky and BM1 George Vernia participated in the first panel review and their suggestions were incorporated in the second draft of the manual. BM1 Vernia helped organize and participated in the second and final panel review. Other SEAL panel reviewers included CW03 John Shellnut, Master Chief Bob Bender, LCDR Pat Butler, and BMCS Duane Noel. Each one of these SEALs provided suggestions and practical recommendations which were instrumental in the finalization of the *“The Navy SEAL Physical Fitness Guide”*.

# About the Authors

**CAPT Frank K. Butler, Jr., M.D.**, developed the chapter “SEAL Mission-Related Activities”. He is currently the Biomedical Research Director for the Naval Special Warfare Command, Chairman of the U.S. Special Operations Command Biomedical Initiatives Steering Committee, and a Staff Ophthalmologist at the Naval Hospital, Pensacola, Florida. He obtained his undergraduate degree from Georgia Institute of Technology in 1971, with high honors. His medical degree is from Medical College of Georgia, 1980. Dr. Butler’s Family Practice Internship was at the Navy Regional Medical Center, Jacksonville, Florida (1980-1981) and his Ophthalmology Residency was at the National Naval Medical Center, Bethesda, MD. where he was Chief Resident (1988-1989). He completed his Undersea Medical Officer Training from the Undersea Medical Institute, Groton, Ct., 1981. CAPT Butler has been a platoon Commander for Underwater Demolition Team TWELVE and SEAL Team ONE, and a Diving Medical Research Officer at the Navy Experimental Diving Unit. He has published extensively and been a frequent guest lecturer on the subject of closed-circuit diving and Special Warfare.

**CAPT John S. Hughes, M.D.**, developed the chapter “Swimming for Fitness” and contributed to “Other Training-Related Issues”. He is a Navy Reserve Undersea Medical Officer who resides near Littleton, Colorado. A graduate of the University of Colorado School of Medicine, Dr. Hughes has a Naval Reserve assignment to NAVSEA in Crystal City, Virginia, where he is assigned to the Supervisor of Diving and Salvage. Dr. Hughes has been involved with Navy diving medicine since 1981. He is Board Certified in Occupational Medicine and his civilian medical practice in Colorado and Wyoming involves operation of clinics and health facilities covering a wide range of high risk industries including commercial diving.

Special qualifications allow Dr. Hughes to participate in the development of the Navy SEAL Physical Fitness Guide. He swam freestyle in the NCAA Championships and won the 1976 Big 8 Conference Championship in the 1650 yd freestyle for the University of Colorado and has remained active as a competitive swimmer. As a mountaineer and cross country skier he has organized and participated in numerous climbs, including two on Denali and Denali North Peak in Alaska. His instrumental work with the SEAL team in developing a winter warfare program during 1982 led him to participate as a staff member of the SEAL winter warfare Greenland operation in 1983. For this involvement, Dr. Hughes received a letter of appreciation from the CO of SEAL Team TWO, CDR Rick Woolard. With the theme of Dr. Hughes' career being medical support of high risk military and industrial operations, he feels that work for the SEALs is at the head of the list.

**CDR Joseph Moore, M.D.**, developed the chapter "Training and Sports-Related Injuries. He completed his undergraduate degree in 1978, and medical degree in 1982 from the University of Virginia after which he was commissioned as a Lieutenant in the Naval Medical Corps. CDR Moore completed his internship at Naval Medical Center, Oakland, California, in June 1983, and received orders to the 1st Marine Division, Camp Pendleton, California. He served as Battalion Surgeon, 2nd Battalion, 9th Marines from July 1983 to October 1985, deploying to Okinawa, Korea and Panama. He also served as 5th Marines Regimental Surgeon during this time period. He completed a Family Practice residency at the Naval Hospital, Camp Pendleton in 1987, followed by a tour as Senior Medical Officer on the island of La Maddalena, Italy. CDR Moore was the first Navy physician selected for a primary care Sports Medicine fellowship, and trained at the San Diego Sports Medicine Center and San Diego State University from December 1989 through January 1991.

CDR Moore is currently the Department Head and Fellowship Director for the Navy's Sports Medicine program at the Naval Hospital and Marine Corps Base, Camp Pendleton. In addition to his duties as Specialty Leader to the Surgeon General, Dr. Moore serves as chairman of the Sports Medicine Advisory Panel to the U.S. Naval Special Warfare Command, Coronado, and advisor to Marine Corps Combat Development Command, Quantico. His work with the civilian community has earned him an appointment by the Governor of California to the Governor's Council on Physical Fitness and Sports. He also holds an appointment to the United States Olympic Committee Team Physician Development Program, Colorado Springs, CO. He is co-chairman of the American Academy of Family Physicians' Review Course for Sports Medicine.

**CDR Brad L. Bennett, Ph.D.**, developed the Chapter "Load Bearing" and he has written a technical report "Load Carriage: Are You Preparing Correctly? Naval Medical Research Institute, Technical Memo 96-71, 1991". He is a research physiologist currently assigned to the

Department of Military and Emergency Medicine, School of Medicine, Uniformed Services University of the Health Sciences, Bethesda, MD. He serves as an Assistant Professor and Director of the Basic Sciences Division. He is a graduate of Wilderness Medicine, and Tactical Emergency Medical Technician courses, and is a department faculty member in the Counter Narcotics Tactical Operations Medical Support (CONTOMS) course as sponsored by the Department of Defense. He earned a Bachelor and Master Degrees in Exercise Science from San Diego State University and a Ph.D. in Kinesiology from the University of Maryland.

He has completed the Navy's diving medicine course and became designated as a Navy Medical Department Deep Sea Diving Officer. He has conducted biomedical research on the impact of environmental stressors on human performance of Navy Special Warfare (SEAL) personnel, U.S. Marine Corps personnel, and Navy damage control personnel. Dr. Bennett currently serves as the Special Advisor to Navy Surgeon General for Physiology.

Dr. Bennett has enjoyed long distance running (10k, half marathons and marathons) for over twenty years. Other hobbies of interest are hiking, kayaking, camping, weight training, target and skeet shooting.

**LCDR Lisa Thorson, M.D.**, wrote the Chapters on Flexibility, Calisthenics and Plyometrics. She earned her B.S. in psychology at the University of Oklahoma in Norman, Oklahoma, and her M.D. from the University of Oklahoma School of Medicine. She has completed the Undersea Medical Officer course and had a tour of duty at the Diver Second Class Training Department, Naval Amphibious School, Naval Amphibious Base, Coronado. LCDR Thorson been involved with the Exercise-Related Injury Program, and all aspects of injury prevention for the Special Forces Community. Projects have included the development of injury tracking software used by the Special Forces community. She also organized the first Naval Special Warfare Sports Medicine conference held May 1994. Recommendations from this conference are documented in Naval Health Research Center Technical Document Number 95-4D, "Naval Special Warfare Sports Medicine Conference Proceedings," and Number 95-5D, "Expert Panel Review of the Naval Special Warfare Calisthenics Sports Medicine Conference Summary."

Currently she is in Residency training in Preventive Medicine at the Uniformed Services University of the Health Sciences, Bethesda, Maryland, where her work documenting injuries in the Special Forces community will continue. She has 13 years of ballet training, has taught and competed in aerobic dance competitions, and spends her time weight-training.

**Patricia Deuster, Ph.D., M.P.H.**, the editor of this guide, wrote "Cardio-respiratory Conditioning" and "Strength Training" and contributed to "Other Training-Related Issues". She compiled the group's recommendations and wrote the chapter "Physical Fitness and Training

Recommendations". She is an Associate Professor and Director of the Human Performance Laboratory in the Department of Military and Emergency Medicine at the Uniformed Services University of the Health Sciences, School of Medicine in Bethesda, Maryland. She has an undergraduate degree in Mathematics, and graduate degrees in Physical Education (M.A.), Nutritional Sciences (Ph.D.), and Public Health (M.P.H.). Her credentials for editing this book are many. She has been conducting research in the area of sports nutrition and exercise physiology for over 14 years, has published numerous papers on the nutritional needs of U.S. Navy SEALs, and has given many sports nutrition seminars to high school, college, and professional athletes, recreational athletes, SWAT teams, dietitians, and other health professionals. She is also an athlete herself. She was a tennis professional for five years and has competed in several triathlons and over 20 marathons; her best marathon time was a 2:48 in the Boston Marathon. Dr. Deuster was a nationally ranked runner for several years and a qualifier for the First Women's Olympic Marathon Trials. She is an avid sportswoman and a former skydiver who has logged in over 100 jumps.

**Anita Singh, Ph.D.**, wrote "Overview of Physical Fitness" and "Running for Fitness" and assisted Dr. Deuster with the editing of this guide. She is an Assistant Professor in the Department of Military and Emergency Medicine at the Uniformed Services University of the Health Sciences, Bethesda, Maryland. Dr. Singh has a Ph.D. in Nutrition from the University of Maryland and she has been working in the area of Sports Nutrition and Exercise Physiology for over 10 years. In addition to looking at nutritional needs of U.S. Navy SEAL trainees, she has studied marathoners, ultramarathoners, and recreational athletes. She has presented her research work at various national and international meetings. Dr. Singh has published extensively in scientific journals and she co-authored "*The Navy SEAL Nutrition Guide*". She runs and plays tennis.

**LDCR Kevin C. Walters, M.D.**, developed the chapter "Training for Specific Environments". He is a Diving Medical Officer at the Naval Special Warfare Center in Coronado, CA. Dr. Walters enlisted in the Navy in 1974 and graduated from BUD/S in 1976 (class 87) and served five and a half years at SEAL Team ONE. He left active duty in 1983 to return to college and graduate school. He received his M.D. degree in 1993 from the Uniformed Services University of the Health and subsequently completed a Transitional Internship at the Naval Medical Center, San Diego, CA.

**CDR Steve Giebner, M.D.**, contributed to the chapter "Harmful Substances that Affect Performance". He is currently the Force Medical Officer for Commander, Naval Special Warfare Command. His association with the Naval Special Warfare community goes back to 1982 when he took his first operational assignment as the Diving Medical Officer



for the Naval Special Warfare Training Department of the Naval Amphibious School, Coronado. He is also plank owner at Naval Special Warfare Center as the first Medical Officer assigned to that command.

Dr. Giebner specialized in Sport and Exercise Preventive Medicine and Health Promotion, having earned the Master of Public Health degree in the Preventive Medicine residency at the University of California at San Diego and San Diego State University. He has long been an active proponent of Sports Medicine in the Navy, and especially within Naval Special Warfare. His long association with Navy SEALs and his professional training uniquely qualify him to contribute to this manual.

In addition to recreational tennis, golf, and in-line skating, Dr. Giebner has consistently participated in command endorsed physical training programs throughout his Naval career. This year marks his first entry in the San Diego Marathon and a Superfrog Triathlon relay team.

**HMC Denise E. Becker, USNR**, developed "Appendix A - Weight Lifting Techniques" and assisted in the editing of this guide. She has a B.S. in Occupational Education and is pursuing a Masters degree in Exercise Physiology. She has served as the Training Chief and is currently assigned to Assault Craft Unit-4 Det 1 as Division Officer and the Medical Department Representative. An avid sportswoman, she has participated in several half marathons, 10 and 5K races, and triathlons. She competed in the Tidewater All-Navy Tennis Tournament. Chief Becker is married to a SEAL, Al Becker, LCDR, USN-RET and they have five children. The whole family has participated in the UDT/ SEAL Reunion Family Fun Run the past 10 years.

# An Introduction by RADM Raymond C. Smith



Membership in the Naval Special Warfare (NSW) community requires an extraordinarily high level of total body physical fitness. A combination of muscular strength, flexibility and cardiovascular fitness is essential to carry out assigned missions.

To train most effectively for these physically demanding tasks, SEALs and others within the NSW community need clear, concise, and authoritative guidance on physical fitness training regimens. This manual, *The Navy SEAL Physical Fitness Guide*, has been written to meet this need.

The authors of this comprehensive guide, physicians and physiologists, were chosen because of their special qualifications in the area of physical fitness and their knowledge of the NSW and SEAL community. Their expertise ensured the guide would be written with the unique requirements of the NSW community in mind, and that our goal of expanding the individual Navy SEAL's knowledge of attaining and retaining a high level of fitness would be achieved.

I commend *The Navy SEAL Physical Fitness Guide* as a superb source of information. Following the advice in this guide will enable SEALs and other members of the NSW community to prepare for the physically demanding missions to which they are assigned in the future.

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